

Art Unit: ***

CLMPTO

03/17/03

1714


Y.M.

Claims 1 – 8

1. (Amended) A corrosion-inhibited fire retardant composition comprising:

at least one fire retardant composition [comprised of at least one] comprising an
ammonium polyphosphate;

at least one suspending agent;

 [at least one] a phosphonate selected from [a] the group consisting of
aminotri(methylenephosphonic acid), 1-hydroxyethylidene-1,1-diphosphonic acid,
hexamethylenediaminetetra(methylenephosphonic acid),
diethylenetriaminepenta(methylenephosphonic acid), and salts thereof, and mixtures thereof;
and

a corrosion inhibiting system [comprised of] comprising at least one corrosion inhibiting
compound selected from [a] the group [of corrosion inhibiting compounds] consisting of azoles,
[insoluble] ferric pyrophosphate, [soluble ferric pyrophosphate,] ferrous oxalate, ferric citrate,
ferrous sulfate, ferric ammonium citrate, [insoluble] ferric orthophosphate, [soluble ferric
orthophosphate,] ferric ammonium oxalate, ferric ammonium sulfate, ferric bromide, ferric
sodium oxalate, ferric stearate, ferric sulfate, ferrous acetate, ferrous ammonium sulfate, ferrous
bromide, ferrous gluconate, ferrous iodide, ferric acetate, ferric fluoroborate, ferric hydroxide.

Art Unit: ***

CLMPTO

03/17/03

1714

Y.M.

Claims 1-8

ferric oleate, ferrous fumarate, ferrous oxalate, ferrous oxide, ferric lactate, ferric resinate, and any combination thereof;

wherein said corrosion inhibiting system is present in a minor amount effective to substantially reduce corrosiveness of said fire retardant composition.

2. (Amended) The composition of claim 1 wherein said [azole is at least one azole] azoles are selected from [a] the group [of azoles including] consisting of tolyltriazole, benzotriazole, mercaptobenzothiazole, dimercaptomthiadiazole, 1,2 benzisothiazoline-3-1, 2-benzimidazolone, 4,5,6,7-

tetrahydrobenzotriazole, tolylimidazole, 2-(5-ethyl-2-pyridyl) benzimidazole, phthalimide, any alkali metal salts thereof and combinations thereof.

3. (Amended) The composition of claim 1 further comprising at least one additive selected from [a] the group [of additives] consisting of coloring agents, surfactants, stabilizers, rheological modifiers, opacifying pigments and any combination thereof.

Art Unit: ***

4. (Amended) The composition of claim 1 wherein said composition is a concentrate suitable for dilution for application, said at least one corrosion [inhibitor] inhibiting compound is at least one azole and said at least one azole is present in said corrosion-inhibited fire retardant composition, in concentrate, in a minor amount effective to obtain a maximum corrosivity of yellow brass to a maximum of 5.0 mils per year, as determined by the "Uniform Corrosion" test set forth in Section 4.5.6.1 of "Specification 5100-304b (January 2000) Superseding Specification 5100-00304a (February 1986)," entitled "Specification for Long Term Retardant, Wildland Fire, Aircraft or Ground Application," issued by the United States Department of Agriculture, Forest Service.

5. (Amended) The composition of claim 3 wherein said coloring [agent is at least one] agents are selected from [a] the group consisting of fugitive coloring agents, non-fugitive coloring agents and pigments, extenders, opacifying pigments, and [other] highly colored pigments [coloring agents].

6. (Amended) The composition of claim 1 wherein said [suspending agent is] at least one suspending agent is selected from [a] the group consisting of Attapulugus, Sepiolite, Fuller's earth, Montmorillonite, and Kaolin clays.

7. (Amended) The composition of claim 1 wherein said corrosion inhibiting system [is comprised of] at least one water-soluble corrosion inhibiting compound and at least one water-insoluble corrosion inhibiting compound.

Art Unit: ***

8. (Amended) The composition of claim 1 wherein said composition is a concentrate suitable for dilution for application, said corrosion inhibiting system is present [in a minor amount effective] in said corrosion-inhibited fire retardant composition[, in concentrate.] in a minor amount effective to obtain [at least one] of a maximum corrosivity to aluminum [of 5.0 mils per year], yellow brass [to 5.0 mils per year, and] or steel [to] of 5.0 mils per year, as determined by the "Uniform Corrosion" test set forth in Section 4.5.6.1 of "Specification 5100-304b (January 2000) Superseding Specification 5100-00304a (February 1986)," entitled "Specification for Long Term Retardant, Wildland Fire, Aircraft or Ground Application," issued by the United States Department of Agriculture, Forest Service.

10. (Amended) The composition of claim 1 comprising [in the range of] from about [.01%] 0.01% by weight to about 10% by weight of said corrosion inhibiting system.

Claim 9 (original)

9. The composition of claim 1 further comprising water.

Claims 10 – 12

10. (Amended) The composition of claim 1 comprising [in the range of] from about [.01%] 0.01% by weight to about 10% by weight of said corrosion inhibiting system.

Art Unit: ***

11. (Amended) The composition of claim 1 comprising [in the range of] ~~from~~ about ~~[.30%]~~ ~~0.30% by weight~~ to about 6.0% ~~by weight~~ of said corrosion inhibiting system.
12. (Amended) The composition of claim 1 comprising [in the range of] ~~from~~ about 0.6% ~~by weight~~ to about 5.0% ~~by weight~~ of said corrosion inhibiting system.

Claims 13 – 20 (original)

13. The composition of claim 1 wherein said phosphonate is aminotri(methylenephosphonic acid), or a salt thereof.
14. The composition of claim 1 wherein said phosphonate is pentasodium aminotri(methylenephosphonic acid).
15. The composition of claim 1 wherein said phosphonate is 1-hydroxyethylidene-1,1-diphosphonic acid, or a salt thereof.
16. The composition of claim 1 wherein said phosphonate is tetrasodium 1-hydroxyethylidene-1,1-diphosphonic acid.
17. The composition of claim 1 wherein said phosphonate is hexamethylenediaminetetra(methylenephosphonic acid), or a salt thereof.
18. The composition of claim 1 wherein said phosphonate is hexapotassium hexamethylenediaminetetra(methylenephosphonic acid).
19. The composition of claim 1 wherein said phosphonate is diethylenetriaminepenta(methylenephosphonic acid), or a salt thereof.
20. The composition of claim 1 wherein said phosphonate is hexasodium diethylenetriaminepenta(methylenephosphonic acid).

Art Unit: ***

Claims 21 – 29

21. (Amended) The composition of claim 1 wherein [at least one] the phosphonate [comprises] makes up less than about 10% by weight of said corrosion-inhibited fire retardant composition[, based on total ammonium polyphosphate composition].

22. (Amended) The composition of claim 1 wherein [at least one] the phosphonate [comprises in the range of] makes up from about 1% by weight to about 10% by weight of said corrosion-inhibited fire retardant composition[, based on total ammonium polyphosphate composition].

23. (Amended) The composition of claim 1 wherein [at least one] the phosphonate [comprises] makes up about 4.35% by weight of said corrosion-inhibited fire retardant composition [based on total ammonium polyphosphate composition].

24. (Amended) The composition of claim 3 wherein said rheological [modifying agent is at least one] modifiers are selected from [a] the group consisting of guar gum, derivatized guar gum and xanthan gum.

25. (Amended) A method of preparing a ready-to-use corrosion-inhibited fire retardant composition, adapted for application to wildland fires, the method comprising the steps of:

(a) forming an intermediate concentrate composition comprising the corrosion-inhibited fire retardant composition of claim 1; and

(b) diluting said intermediate concentrate composition with water to form said ready-to-use corrosion-inhibited fire retardant composition.

Art Unit: ***

26. (Amended) The method of claim 25 wherein said [azole is at least one azole] azoles are selected from [a] the group [of azoles including] consisting of tolyltriazole, benzotriazole, mercaptobenzothiazole, dimercaptomthiadiazole, 1,2 benzisothiazoline-3-1, 2-benzimidazolone, 4,5,6,7-tetrahydrobenzotriazole, tolylimidazole, 2-(5-ethyl-2-pyridyl) benzimidazole, phthalimide, any alkali metal salts thereof and combinations thereof.

27. (Amended) The method of claim 25 wherein said corrosion inhibiting system [is comprised of] comprises at least one water-soluble corrosion inhibiting compound and at least one water-insoluble corrosion inhibiting compound.

28. (Amended) The method of claim 25 wherein said intermediate concentrate composition further comprises at least one additive selected from [a] the group [of additives] consisting of coloring agents, surfactants, stabilizers, rheological modifiers, opacifying pigments and any combination thereof.

29. (Amended) The method of claim 25 wherein said corrosion inhibiting system comprises at least one azole and said at least one azole is present in said [corrosion-inhibited fire retardant] intermediate concentrate composition[, in concentrate,] in a minor amount effective to obtain a maximum corrosivity of yellow brass to 5.0 mils per year, as determined by the "Uniform Corrosion" test set forth in Section 4.5.6.1 of "Specification 5100-304b (January 2000) Superseding Specification 5100-00304a (February 1986)," entitled "Specification for Long Term Retardant, Wildland Fire, Aircraft or Ground Application," issued by the United States Department of Agriculture, Forest Service.

Claim 30 (original)

Art Unit: ***

30. The method of claim 25 wherein said corrosion inhibiting system is present in a minor amount effective to reduce the corrosiveness of said fire retardant composition, in concentrate, to at least one of a maximum corrosivity of aluminum to 5.0 mils per year, brass to 5.0 mils per year, and steel to 5.0 mils per year, as determined by the "Uniform Corrosion" test set forth in Section 4.5.6.1 of "Specification 5100-304b (January 2000) Superseding Specification 5100-00304a (February 1986)," entitled "Specification for Long Term Retardant, Wildland Fire, Aircraft or Ground Application," issued by the United States Department of Agriculture, Forest Service.

Claims 31 – 33

31. (Amended) The method of claim 25 wherein said intermediate concentrate composition is diluted such that the ready-to-use corrosion-inhibited fire retardant composition has a maximum

Art Unit: ***

corrosivity to [of] aluminum [is] of 2.0 mils per year and [the maximum corrosivity of] to brass and steel [is] of 2.0 mils per year when tested in the totally immersed condition and of 5.0 mils per year when tested in the partially immersed condition, as specified and determined by the "Uniform Corrosion" test set forth in Section 4.5.6.1 of "Specification 5100-304b (January 2000) Superseding Specification 5100-00304a (February 1986)," entitled "Specification for Long Term Retardant, Wildland Fire, Aircraft or Ground Application," issued by the United States Department of Agriculture, Forest Service.

32. (Amended) The method of claim 28 wherein said intermediate concentrate composition further comprises [coloring agent is] at least one coloring agent selected from [a] the group [of coloring agents] consisting of fugitive coloring agents, non-fugitive coloring agents and pigments, extenders, opacifying pigments, and [other] highly colored pigments [coloring agents].

33. (Amended) The method of claim 25 wherein said [suspending agent is] at least one suspending agent is selected from [a] the group [of suspending agents] consisting of Attapulugus clay, Sepiolite, Fuller's earth, Montmorillonite, and Kaolin clays.

Claims 34 – 41 (original)

Art Unit: ***

34. The method of claim 25 wherein said phosphonate is aminotri(methylenephosphonic acid), or a salt thereof.

35. The method of claim 25 wherein said phosphonate is pentasodium aminotri(methylenephosphonic acid).

36. The method of claim 25 wherein said phosphonate is 1-hydroxyethylidene-1,1-diphosphonic acid, or a salt thereof.

37. The method of claim 25 wherein said phosphonate is tetrasodium 1-hydroxyethylidene-1,1-diphosphonic acid.

38. The method of claim 25 wherein said phosphonate is hexamethylenediaminetetra(methylenephosphonic acid), or a salt thereof.

39. The method of claim 25 wherein said phosphonate is hexapotassium hexamethylenediaminetetra(methylenephosphonic acid).

40. The method of claim 25 wherein said phosphonate is diethylenetriaminepenta(methylenephosphonic acid), or a salt thereof.

41. The method of claim 25 wherein said phosphonate is hexasodium diethylenetriaminepenta(methylenephosphonic acid).

Claims 42 – 45

Art Unit: ***

42. (Amended) The method of claim 25 wherein [at least one] the phosphonate [comprises] makes up less than about 10% by weight of said ready-to-use corrosion-inhibited fire retardant composition[, based on total ammonium polyphosphate composition].

43. (Amended) The method of claim 25 wherein [at least one] the phosphonate [comprises in the range of] makes up from about 1% by weight to about 10% by weight of said ready-to-use corrosion-inhibited fire retardant composition[, based on total ammonium polyphosphate composition].

44. (Amended) The method of claim 25 wherein [at least one] the phosphonate [comprises] about 4.35% by weight of said ready-to-use corrosion-inhibited fire retardant composition [based on total ammonium polyphosphate composition].

45. (Amended) The method of claim 28 wherein said rheological [modifying agent is at least one] modifiers are selected from (a) the group consisting of guar gum, derivatized guar gum and xanthan gum.

Claim 46 (original)

46. A method of suppressing wildland fires comprising acrially applying to wildland vegetation a fire suppressing composition comprising:
water; and
the corrosion-inhibited fire retardant composition of claim 1.

Claims 47 – 64

Art Unit: ***

47. (Amended) The method of claim 46 wherein said [azole is at least one azole] azoles are selected from [a] the group [of azoles including] consisting of tolyltriazole, benzotriazole, mercaptobenzothiazole, dimercaptomthiadiazole, 1,2 benzisothiazoline-3-1, 2-benzimidazolone, 4,5,6,7-tetrahydrobenzotriazole, tolylimidazole, 2-(5-ethyl-2-pyridyl) benzimidazole, phthalimide, any alkali metal salts thereof and combinations thereof.

48. (Amended) The method of claim 46 further comprising at least one additive selected from [a] the group [of additives] consisting of coloring agents, surfactants, stabilizers, rheological modifiers, opacifying pigments, and any combination thereof.

49. (Amended) The method of claim 46 wherein said at least one corrosion [inhibitor] inhibiting compound is at least one azole and said at least one azole is present in said corrosion-inhibited fire retardant composition[, in concentrate,] in a minor amount effective to obtain a maximum corrosivity of yellow brass [to a maximum] of 5.0 mils per year, as determined by the "Uniform Corrosion" test set forth in Section 4.5.6.1 of "Specification 5100-304b (July 1999) Superseding Specification 5100-00304a (February 1986)," entitled "Specification for Long Term Retardant, Wildland Fire, Aircraft or Ground Application," issued by the United States Department of Agriculture, Forest Service.

Art Unit: ***

50. (Amended) The method of claim 48 wherein said coloring [agent is at least one] agents are selected from [a] the group consisting of fugitive coloring agents, non-fugitive coloring agents and pigments, extenders, opacifying pigments, and [other] highly colored pigments [coloring agents].

51. (Amended) The method of claim 46 wherein said [suspending agent is] at least one suspending agent is selected from [a] the group [of suspending agents] consisting of Attapulgus clay, Sepiolite, Fuller's earth, Montmorillonite, and Kaolin clays.

52. (Amended) The method of claim 46 wherein said corrosion inhibiting system [is comprised of] comprises at least one water-soluble corrosion inhibiting compound and at least one water-insoluble corrosion inhibiting compound.

53. (Amended) The method of claim 46 wherein said corrosion inhibiting system is present in a minor amount effective to reduce the maximum corrosivity [corrosiveness] of said corrosion-inhibited fire retardant composition[, in concentrate, to at least one of a maximum corrosivity of] to aluminum to 5.0 mils per year, to brass to 5.0 mils per year, and to steel to 5.0 mils per year, as determined by the "Uniform Corrosion" test set forth in Section 4.5.6.1 of "Specification 5100-304b (January 2000) Superseding Specification 5100-00304a (February 1986)," entitled "Specification for Long Term Retardant, Wildland Fire, Aircraft or Ground Application," issued by the United States Department of Agriculture, Forest Service.

54. (Amended) The method of claim 46 wherein said corrosion-inhibited fire retardant composition comprises [in the range of] from about [.01%] 0.01% by weight to about 10.0% by weight said corrosion inhibiting system.

Art Unit: ***

55. (Amended) The method of claim 46 wherein said corrosion-inhibited fire retardant composition comprises [in the range of] ~~from about [.30%]~~ 0.30% by weight to about 6.0% by weight said corrosion inhibiting system.

56. (Amended) The method of claim 46 wherein said corrosion-inhibited fire retardant composition comprises [in the range of] ~~from about .60%~~ by weight to about 5.0% by weight said corrosion inhibiting system.

57. (Amended) The method of claim 48 wherein said rheological [modifier is at least one] modifiers are selected from [a] the group consisting of guar gum, derivatized guar gum and xanthan gum.

58. (Amended) A method of inhibiting corrosion comprising providing a corrodible material and contacting said corrodible material with the corrosion-inhibited fire retardant composition of claim 1.

59. (Amended) The method of claim 58 wherein said [azole is at least one azole] azoles are selected from [a] the group [of azoles including] consisting of tolyltriazole, benzotriazole, mercaptobenzothiazole, dimercaptomthiadiazole, 1,2 benzisothiazoline-3-1, 2-benzimidazolone, 4,5,6,7-tetrahydrobenzotriazole, tolylimidazole, 2-(5-ethyl-2-pyridyl) benzimidazole, phthalimide, any alkali metal salts thereof and combinations thereof.

60. (Amended) The method of claim 58 wherein said corrosion-inhibited fire retardant composition [is comprised of] comprises at least one water-soluble corrosion inhibiting compound and at least one water-insoluble corrosion inhibiting compound.

61. (Amended) The method of claim 58 wherein said corrosion-inhibited fire-retardant composition further comprises at least one additive selected from [a] the group [of additives]

Art Unit: ***

consisting of coloring agents, opacifying pigments, surfactants, stabilizers, rheological modifiers, and any combination thereof.

62. (Amended) The method of claim 58 wherein said corrodible material is [at least one material] selected from [a] the group [of corrodible materials] consisting of steel, brass and aluminum.

63. (Amended) The method of claim 58 wherein said corrosion-inhibited fire retardant composition further comprises water.

64. (Amended) The method of claim 58 wherein said [suspending agent is] at least one suspending agent is selected from [a] the group [of suspending agents] consisting of Attapulugus clay, Fuller's earth, Montmorillonite, Sepiolite and Kaolin clays.

Claims 65 – 72 (original)

Art Unit: ***

65. The method of claim 58 wherein said phosphonate is aminotri(methylenephosphonic acid), or a salt thereof.
66. The method of claim 58 wherein said phosphonate is pentasodium aminotri(methylenephosphonic acid).
67. The method of claim 58 wherein said phosphonate is 1-hydroxyethylidene-1,1-diphosphonic acid, or a salt thereof.
68. The method of claim 58 wherein said phosphonate is tetrasodium 1-hydroxyethylidene-1,1-diphosphonic acid.
69. The method of claim 58 wherein said phosphonate is hexamethylenediaminetetra(methylenephosphonic acid), or a salt thereof.
70. The method of claim 58 wherein said phosphonate is hexapotassium hexamethylenediaminetetra(methylenephosphonic acid).
71. The method of claim 58 wherein said phosphonate is diethylenetriaminepenta(methylenephosphonic acid), or a salt thereof.
72. The method of claim 58 wherein said phosphonate is hexasodium diethylenetriaminepenta(methylenephosphonic acid).

Claims 73 – 78

Art Unit: ***

73. (Amended) The method of claim 58 wherein at least one phosphonate comprises less than about 10% by weight of said composition, based on total ammonium polyphosphate composition.

74. (Amended) The method of claim 58 wherein [at least one] the phosphonate [comprises] makes up in the range of about 1% to about 10% by weight of said corrosion-inhibited fire retardant composition], based on total ammonium polyphosphate composition].

75. (Amended) The method of claim 58 wherein [at least one] the phosphonate [comprises] makes up about 4.35% by weight of said corrosion-inhibited fire retardant composition [based on total ammonium polyphosphate composition].

76. (Amended) The method of claim 61 wherein said rheological [modifier is at least one] modifiers are selected from [a] the group consisting of guar gum, derivatized guar gum and xanthan gum.

77. (Amended) The method of claim 61 wherein said coloring [agent is at least one] agents are selected from [a] the group consisting of fugitive coloring agents, non-fugitive coloring agents and pigments, extenders, opacifying pigments, and [other] highly colored pigments [coloring agents].

Art Unit: ***

78. (Amended) A corrosion-inhibited agricultural plant nutrient composition comprising:

at least one agricultural plant nutrient;

at least one suspending agent;

at least one phosphonate selected from [a] the group consisting of

aminotri(methylenephosphonic acid), 1-hydroxyethylidene-1,1-diphosphonic acid,

hexamethylenediaminetetra(methylenephosphonic acid),

diethylenetriaminepenta(methylenephosphonic acid), salts thereof, and mixtures thereof; and

a corrosion inhibiting system [comprised of] comprising at least one corrosion inhibiting compound selected from [a] the group [of corrosion inhibiting compounds] consisting of azoles,

[insoluble] ferric pyrophosphate, [soluble ferric pyrophosphate,] ferrous oxalate, ferric citrate,

ferrous sulfate, ferric ammonium citrate, [insoluble] ferric orthophosphate, [soluble ferric

orthophosphate,] ferric ammonium oxalate, ferric ammonium sulfate, ferric bromide, ferric

sodium oxalate, ferric stearate, ferric sulfate, ferrous acetate, ferrous ammonium sulfate, ferrous

bromide, ferrous gluconate, ferrous iodide, ferric acetate, ferric fluoroborate, ferric hydroxide,

ferric oleate, ferrous fumarate, ferrous oxalate, ferrous oxide, ferric lactate, ferric resinate and

any combination thereof;

wherein said corrosion inhibiting system is present in a minor amount effective to substantially

reduce corrosiveness of said agricultural plant nutrient composition.